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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/790,627	03/01/2004	Brad N. Mathiowetz	P32.12-0022	1342
27367 7590 08/13/2008 WESTMAN CHAMPLIN & KELLY, P.A. SUITE 1400 900 SECOND AVENUE SOUTH MINNEAPOLIS, MN 55402-3244				
EXAMINER				
CHUO, TONY SHENG HSIANG				
ART UNIT		PAPER NUMBER		
1795				
MAIL DATE		DELIVERY MODE		
08/13/2008		PAPER		

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary

Application No.

10/790,627

Applicant(s)

MATHIOWETZ ET AL.

Examiner

Tony Chuo

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 20 June 2008.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-11 and 24-35 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-11 and 24-35 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 03 December 2007 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO/SB/06)
Paper No(s)/Mail Date _____
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date _____
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: _____

DETAILED ACTION

Continued Examination Under 37 CFR 1.114

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 6/20/08 has been entered.

Response to Amendment

2. Claims 1-11 and 24-35 are currently pending. Claims 12-23 have been cancelled. New claims 24-35 have been added. The amended claims 1 and 9 do not overcome the previously stated 102 and 103 rejections. Therefore, upon further consideration, claims 1-11 and 24-35 are rejected under the following new and previously stated 102 and 103 rejections.

Claim Rejections - 35 USC § 102

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

4. Claims 1-5 are rejected under 35 U.S.C. 102(b) as being anticipated by Ura et al (WO 01/080331) using (US 2003/0017383) as an equivalent English translation.

The Ura reference discloses a case for temperature regulation of an electrical energy storage cell comprising: a first layer that is a heat dissipating portion "4a" that is shaped to conform to a cylindrical portion of an outer surface of cell "2", wherein the heat dissipating portion terminates at first layer ends that are on the cylindrical portion of the outer surface of the cell and has a thickness of approximately 0.3 mm; and a second layer that is a resin made pack case "1" that is shaped to cover an outer surface of the first layer and that extends beyond the outer surface to completely cover the first layer ends and that exhibits poor thermal conductivity (See Figure 1 and 2 and paragraphs [0025]). It also discloses heat dissipating portions that are made of aluminum or copper that exhibit excellent thermal conductivity (See paragraph [0022]). It also discloses a battery pack that has a maximum temperature of the cells that is 43°C (See paragraphs [0034],[0036]).

Examiner's note: It is inherent that the first and second layers have known thermal conductivities values because the materials are known. The limitation "a combustible atmosphere temperature classification that specifies an outer surface temperature during a short circuit of the electrical energy storage cell" is construed as being an inherent property of a battery cover because if Ura battery cover was tested during a short circuit condition of the battery, it would inherently have a temperature classification that specifies an outer surface temperature. It is also inherent that when the battery produces heat at a hot spot during short circuit, the first layer of material

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would spread flow of heat over a portion of the outer surface of the first layer that is larger than the hot spot and the second layer of material would retard the flow of heat to an outer surface of the second layer. It is also inherent that a cover consisting of a first layer that is an aluminum or copper layer exhibiting excellent thermal conductivity and a second layer that is a resin case exhibiting poor thermal conductivity would retard the flow of heat to an outer surface such that the temperature of the outer surface of the resin case has a measured maximum temperature of 130 degrees centigrade or less during a short circuit condition.

In addition, the limitation "controlling the outer surface temperature of the combined cover and electrical energy storage cell such that the combined cover and electrical energy storage cell comprises intrinsically safe equipment" is construed as being intended use and therefore is not given patentable weight because the cover taught by Ura et al is capable of controlling the outer surface temperature of the combined cover and electrical energy storage cell.

Claim Rejections - 35 USC § 103

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

6. Claims 6 and 7 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ura et al (WO 01/080331) using (US 2003/0017383) as an equivalent English

translation, in view of Toyoda (JP 2001-243927). The Ura reference is applied to claim 1 for reasons stated above.

However, Ura et al does not expressly teach a second layer of material that is heat-shrink tubing or an elastic material. The Toyoda reference discloses a heat shrink member "8" that covers a battery (See paragraph [0008]).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the Ura battery cover to include a second layer of material that comprises heat-shrink tubing or elastic material in order to improve the reliability of the outer package of the battery while simplifying the manufacture of the battery.

7. Claim 8 is rejected under 35 U.S.C. 103(a) as being unpatentable over Ura et al (WO 01/080331) using (US 2003/0017383) as an equivalent English translation, in view of Koehler et al (EP 0177225). The Ura reference is applied to claim 1 for reasons stated above.

However, Ura et al does not expressly teach a first layer that comprises two thermally conductive half-shells that each cover one side of a round surface of the energy storage cell. The Koehler reference discloses a cooling system for batteries that comprises cooling panels "15" & "16" that form thermally conductive half shells that each cover one side of a round surface of the energy storage cell (See Figure 6).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the Ura battery cover to include a first layer that comprises two thermally conductive half-shells that each cover one side of a round

surface of the energy storage cell in order to increase the surface area of the heat dissipating portion that contacts the energy storage cells such that the thermal efficiency of the heat dissipating portion is increased.

8. Claims 9 and 10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Stafford et al (US 5763118) in view of Miller et al (US 5204194).

The Stafford reference discloses a battery comprising: a plurality of battery cells "22", wherein each cell is covered by a first heat-conductor layer "42" that is shaped to conform to a cylindrical portion of an outer surface of the battery that terminates at first layer ends that are on the cylindrical portion of the outer surface of the battery cell and a second structural support outer layer "48" that is shaped to conform to and completely covers the outer surface of the first heat-conductor layer (See column 3 line 67 to column 4 line 2 and column 4 line 56 to column 5 line 24, and Figures 1, 3, & 5). It also discloses electrical contacts "34" (See column 4, lines 9-10).

Examiner's note: The first layer ends are construed as being the portions of the first heat conductor layer that form the interface between the two half-shells. The limitation "a combustible atmosphere temperature classification that specifies an outer surface temperature during a short circuit of the electrical energy storage cell" is construed as being an inherent property of a battery cover comprising a first layer that has a first thickness and high thermal conductivity and a second layer that has a second thickness and poor thermal conductivity.

However, Stafford et al does not expressly teach a protective device including a fusible link; electrical interconnections that interconnect the plurality of battery cells in a

series circuit with the protective device and the electrical contacts; and a plastic resin shell shaped to receive the plurality of covered cells and the protective device. The Miller reference discloses a multicell battery comprising: a plurality of electrical energy storage cells "24" & "26"; a protective device including a fusible link "64" and electrical interconnections "50" that interconnect the plurality of electrical energy storage cells in series circuit with the protective device and the electrical connection leads; and a plastic resin shell "22" shaped to receive the plurality of covered cells and the protective device (See Figure 1 and 3 and column 3, lines 39-41).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the Stafford battery pack to include a protective device including a fusible link; electrical interconnections that interconnect the plurality of battery cells in a series circuit with the protective device and the electrical contacts; and a plastic resin shell shaped to receive the plurality of covered cells and the protective device in order to provide an overcurrent protection device and outer case that are easily and economically constructed.

Examiner's note: It is inherent that the combination of the first and second layers and the protective device would render the battery intrinsically safe because combination of a battery cell with good heat removal properties and a protective device including a fusible link would necessarily form a battery that is intrinsically safe.

9. Claim 11 is rejected under 35 U.S.C. 103(a) as being unpatentable over Stafford et al (US 5763118) in view of Miller et al (US 5204194) as applied to claims 9 and 10 above, and further in view of Maggert et al (US 6724170).

However, Stafford et al as modified by Miller et al does not expressly teach a plastic resin shell that includes plastic resin separation bars positioned between the cells and the electrical interconnections to reduce shorting. The Maggert reference discloses a plastic casing "202" positioned between the cells and the electrical interconnections to prevent tabs from shorting (See column 3 line 66 to column 4 line 4).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the Stafford/Miller battery pack to include separation bars in the plastic resin shell in order to prevent the tabs from shorting to either tabs or other cell housings.

10. Claims 24-27 and 29 are rejected under 35 U.S.C. 103(a) as being unpatentable over Stafford et al (US 5763118) in view of Miller et al (US 5204194), and further in view of Pajakowski et al (US 6718425).

The Stafford reference discloses a battery comprising: a plurality of nickel hydrogen battery cells "22" that are rechargeable cells, wherein each cell is covered by a first heat-conductor layer "42" that is shaped to conform to a cylindrical portion of an outer surface of the battery that terminates at first layer ends that are on the cylindrical portion of the outer surface of the battery cell and a second structural support outer layer "48" that is shaped to conform to and completely covers the outer surface of the first heat-conductor layer (See column 3 line 65 to column 4 line 2 and column 4 line 56 to column 5 line 24, and Figures 1, 3, & 5). It also discloses electrical contacts "34" (See column 4, lines 9-10).

Examiner's note: The first layer ends are construed as being the portions of the first heat conductor layer that form the interface between the two half-shells. The limitation "a combustible atmosphere temperature classification that specifies an outer surface temperature during a short circuit of the electrical energy storage cell" is construed as being an inherent property of a battery cover comprising a first layer that has a first thickness and high thermal conductivity and a second layer that has a second thickness and poor thermal conductivity.

However, Stafford et al does not expressly teach a protective device including a fusible link; electrical interconnections that interconnect the plurality of battery cells in a series circuit with the protective device and the electrical contacts; and a plastic resin shell shaped to receive the plurality of covered cells and the protective device. The Miller reference discloses a multicell battery comprising: a plurality of electrical energy storage cells "24" & "26"; a protective device including a fusible link "64" and electrical interconnections "50" that interconnect the plurality of electrical energy storage cells in series circuit with the protective device and the electrical connection leads; and a plastic resin shell "22" shaped to receive the plurality of covered cells and the protective device (See Figure 1 and 3 and column 3, lines 39-41).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the Stafford battery pack to include a protective device including a fusible link; electrical interconnections that interconnect the plurality of battery cells in a series circuit with the protective device and the electrical contacts; and a plastic resin shell shaped to receive the plurality of covered cells and the

protective device in order to provide an overcurrent protection device and outer case that are easily and economically constructed.

However, Stafford et al as modified by Miller et al does not expressly teach an apparatus comprising a data acquisition unit, wherein the apparatus is portable and handheld. The Pajakowski reference discloses a data system (data acquisition unit) for collecting, displaying, and analyzing data that is portable and handheld and is powered by a battery power supply (See Abstract).

Therefore, one skill in the art could have combined the Stafford/Miller battery pack and the Pajakowski data system by known methods with no change to their respective functions, and the combination would have yielded nothing more than predictable results to one of ordinary skill in the art at the time of the invention.

Examiner's note: It is inherent that the apparatus is intrinsically safe because the combination of a data acquisition unit and a battery cell that has inherent safety features would necessarily result in an apparatus that is intrinsically safe.

11. Claim 28 is rejected under 35 U.S.C. 103(a) as being unpatentable over Stafford et al (US 5763118) in view of Miller et al (US 5204194) and Pajakowski et al (US 6718425) as applied to claim 24 above, and further in view of Iwasaki et al (US 6325611).

However, Stafford et al as modified by Miller et al and Pajakowski et al does not expressly teach a short circuit that is external to the battery. The Iwasaki reference discloses an external short circuiting test that forms a hot spot on the cell near the lead

member by heat generation due to the resistance of the lead member (See column 7, lines 13-22).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the Stafford/Miller/Pajakowski apparatus to include a short circuit that is external to the battery in order to confirm that the battery can maintain high safety even under the application of an extraordinarily high charge voltage.

12. Claims 30-33 and 35 are rejected under 35 U.S.C. 103(a) as being unpatentable over Stafford et al (US 5763118) in view of Miller et al (US 5204194), and further in view of Kosh (US 2003/0046974).

The Stafford reference discloses a battery comprising: a plurality of nickel hydrogen battery cells "22" that are rechargeable cells, wherein each cell is covered by a first heat-conductor layer "42" that is shaped to conform to a cylindrical portion of an outer surface of the battery that terminates at first layer ends that are on the cylindrical portion of the outer surface of the battery cell and a second structural support outer layer "48" that is shaped to conform to and completely covers the outer surface of the first heat-conductor layer (See column 3 line 65 to column 4 line 2 and column 4 line 56 to column 5 line 24, and Figures 1, 3, & 5). It also discloses electrical contacts "34" (See column 4, lines 9-10).

Examiner's note: The first layer ends are construed as being the portions of the first heat conductor layer that form the interface between the two half-shells. The limitation "a combustible atmosphere temperature classification that specifies an outer

surface temperature during a short circuit of the electrical energy storage cell" is construed as being an inherent property of a battery cover comprising a first layer that has a first thickness and high thermal conductivity and a second layer that has a second thickness and poor thermal conductivity.

However, Stafford et al does not expressly teach a protective device including a fusible link; electrical interconnections that interconnect the plurality of battery cells in a series circuit with the protective device and the electrical contacts; and a plastic resin shell shaped to receive the plurality of covered cells and the protective device. The Miller reference discloses a multicell battery comprising: a plurality of electrical energy storage cells "24" & "26"; a protective device including a fusible link "64" and electrical interconnections "50" that interconnect the plurality of electrical energy storage cells in series circuit with the protective device and the electrical connection leads; and a plastic resin shell "22" shaped to receive the plurality of covered cells and the protective device (See Figure 1 and 3 and column 3, lines 39-41).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the Stafford battery pack to include a protective device including a fusible link; electrical interconnections that interconnect the plurality of battery cells in a series circuit with the protective device and the electrical contacts; and a plastic resin shell shaped to receive the plurality of covered cells and the protective device in order to provide an overcurrent protection device and outer case that are easily and economically constructed.

However, Stafford et al as modified by Miller et al does not expressly teach an apparatus comprising a calibrator, wherein the apparatus is portable and handheld. The Kosh reference discloses a handheld calibration module "12" and a battery located in the handheld module (See paragraphs [0016],[0018]).

Therefore, one skill in the art could have combined the Stafford/Miller battery pack and the Kosh calibrator by known methods with no change to their respective functions, and the combination would have yielded nothing more than predictable results to one of ordinary skill in the art at the time of the invention.

Examiner's note: It is inherent that the apparatus is intrinsically safe because the combination of a calibrator and a battery cell that has inherent safety features would necessarily result in an apparatus that is intrinsically safe.

13. Claim 34 is rejected under 35 U.S.C. 103(a) as being unpatentable over Stafford et al (US 5763118) in view of Miller et al (US 5204194) and Kosh (US 2003/0046974) as applied to claim 30 above, and further in view of Iwasaki et al (US 6325611).

However, Stafford et al as modified by Miller et al and Kosh does not expressly teach a short circuit that is external to the battery. The Iwasaki reference discloses an external short circuiting test that forms a hot spot on the cell near the lead member by heat generation due to the resistance of the lead member (See column 7, lines 13-22).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the Stafford/Miller/Kosh apparatus to include a short circuit that is external to the battery in order to confirm that the battery can

maintain high safety even under the application of an extraordinarily high charge voltage.

Response to Arguments

14. Applicant's arguments filed 6/20/08 have been fully considered but they are not persuasive.

The applicant argues that Ura et al does not disclose a cover controlling an outer surface temperature of a combined cover and electrical energy storage cell such that the combined cover and electrical energy storage cell comprise intrinsically safe equipment. As stated above, this limitation is construed as being intended use and therefore is not given patentable weight.

The applicant also argues that neither Stafford et al nor Miller et al taken singly or in combination, teach or suggest a combination of the first and second layers and the protective device rendering the battery intrinsically safe as presently claimed in claim 9. As stated above, it is inherent that the combination is intrinsically safe because of the known safety features of the battery.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Tony Chuo whose telephone number is (571)272-0717. The examiner can normally be reached on M-F, 9:00AM to 5:30PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's

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supervisor, Patrick Ryan can be reached on (571) 272-1292. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

TC

/Jonathan Crepeau/
Primary Examiner, Art Unit 1795